

For each question, you need to find the answer and show your work. Each problem is worth 3 points: one for the correct answer and two for showing your work. For some problems, you may just need to write out how you know you have the correct answer.

1. State whether the number is rational or irrational. How do you know?

a. 1.454545...

b. 0.87

c. $\sqrt{98}$

d. $\sqrt{300}$

2. Put the following numbers in order from smallest to largest.

$3, \sqrt{2}, \sqrt{4}, 5, \sqrt{14}$

3. For which of the following can no exact value be found? How do you know?

a. The area of a trapezoid

b. The volume of a square pyramid

c. The perimeter of a hexagon

d. The volume of a sphere

4. Between which two consecutive integers is the value of $\sqrt{500}$?

5. The length of a side of a square is $\sqrt{35}$ units. What is the area of the square?
6. Approximate $\sqrt{43}$ to the nearest hundredth.
7. Approximate $\frac{\sqrt{12}}{3}$ to the nearest thousandth.
8. Other than π and any other number already on this sheet, list 4 irrational numbers and state how you know they are irrational.

Open-Ended Question: Answer the following question on a separate piece of paper. Make sure as you answer the open-ended question that you show your work AND explain how you know you are doing the correct work. YOU MUST EXPLAIN WHAT YOU ARE DOING!!!

The circumference of a circle is always an irrational number because it includes a value multiplied by pi, an irrational number.

A. Describe a circumstance in which the length of a side of a rectangle could be irrational number, but the area of the rectangle could be rational.

B. Consider your answer to part A. Would the value of the perimeter of the rectangle be rational or irrational?